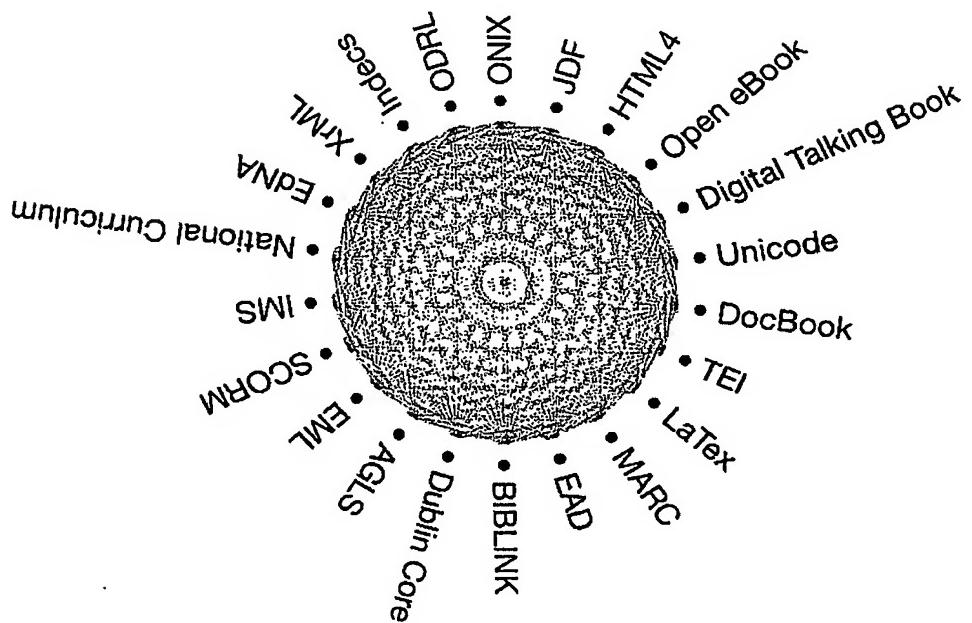


FIG. 1: The Crosswalks Dilemma Illustrated—17 Ontologies Require 272 Crosswalks



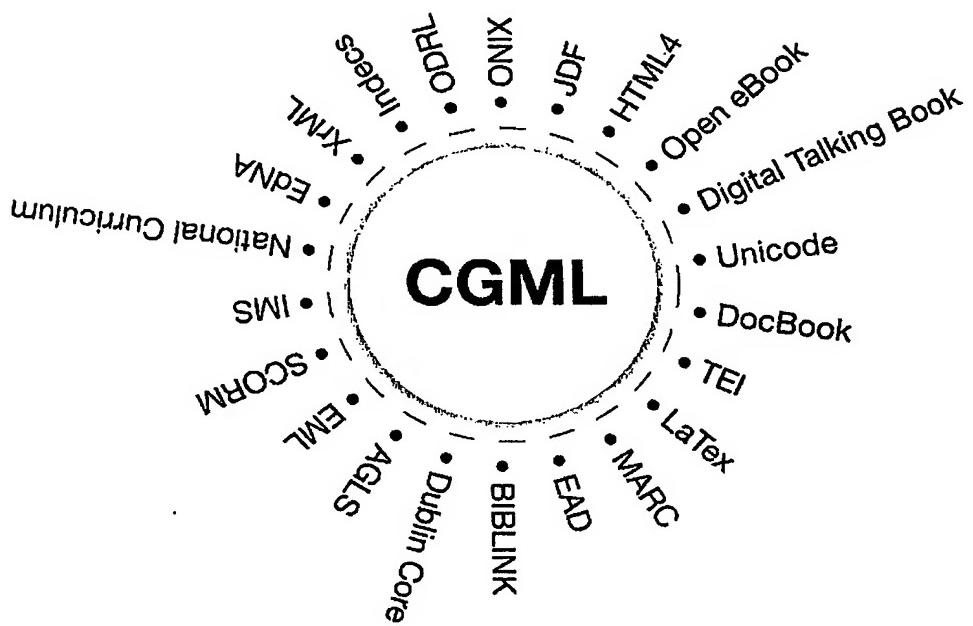
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FIG. 2: The Indefinitely Extensible Interlanguage Mechanism—Common Ground Markup Language (CGML) as an example.



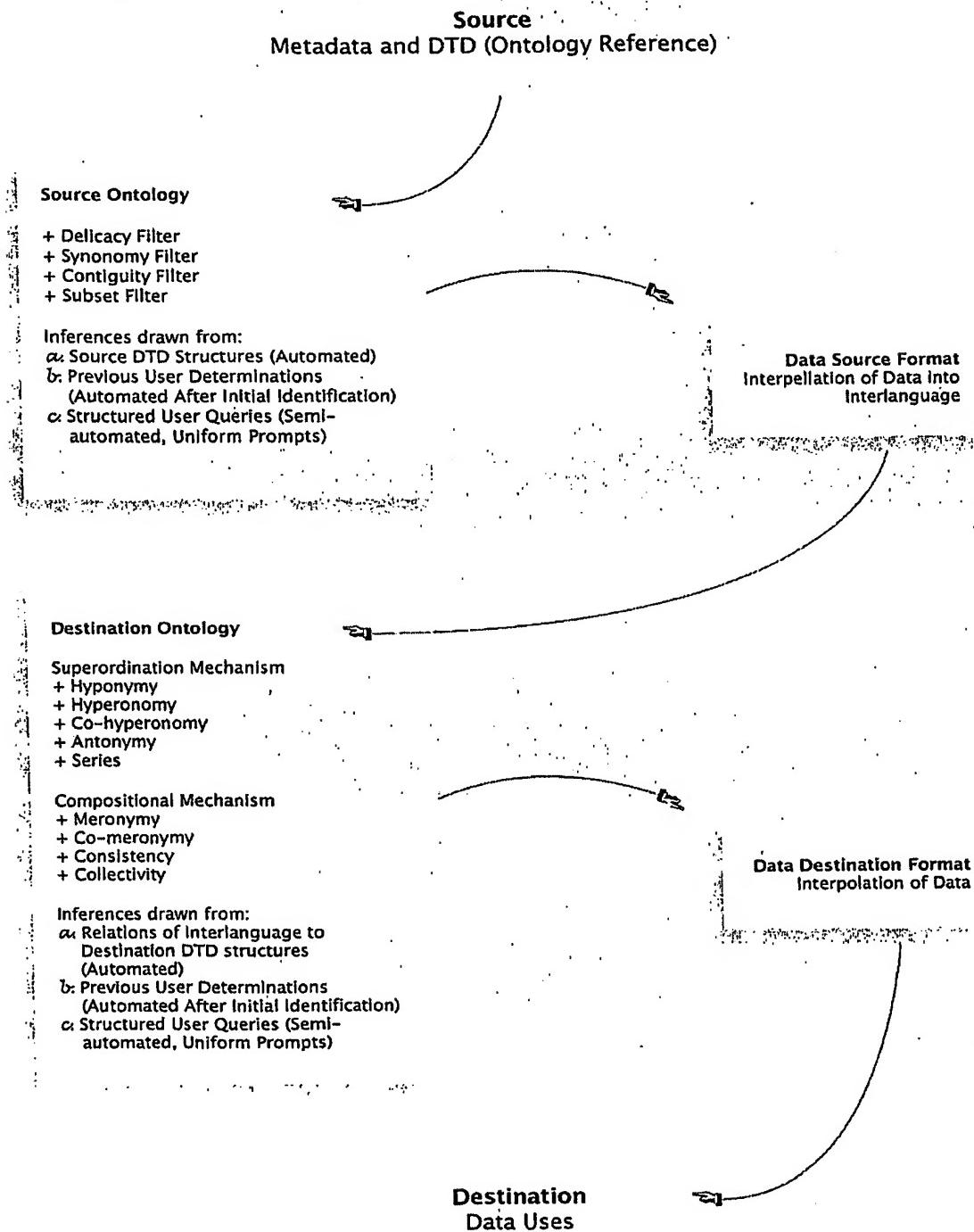
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FIG. 3: Using the Interlanguage Mechanism, the Number of Mappings Equals the Number of Mapped Schemas (in this case n=17)



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FIG. 4: The method of operation of the Interlanguage apparatus.



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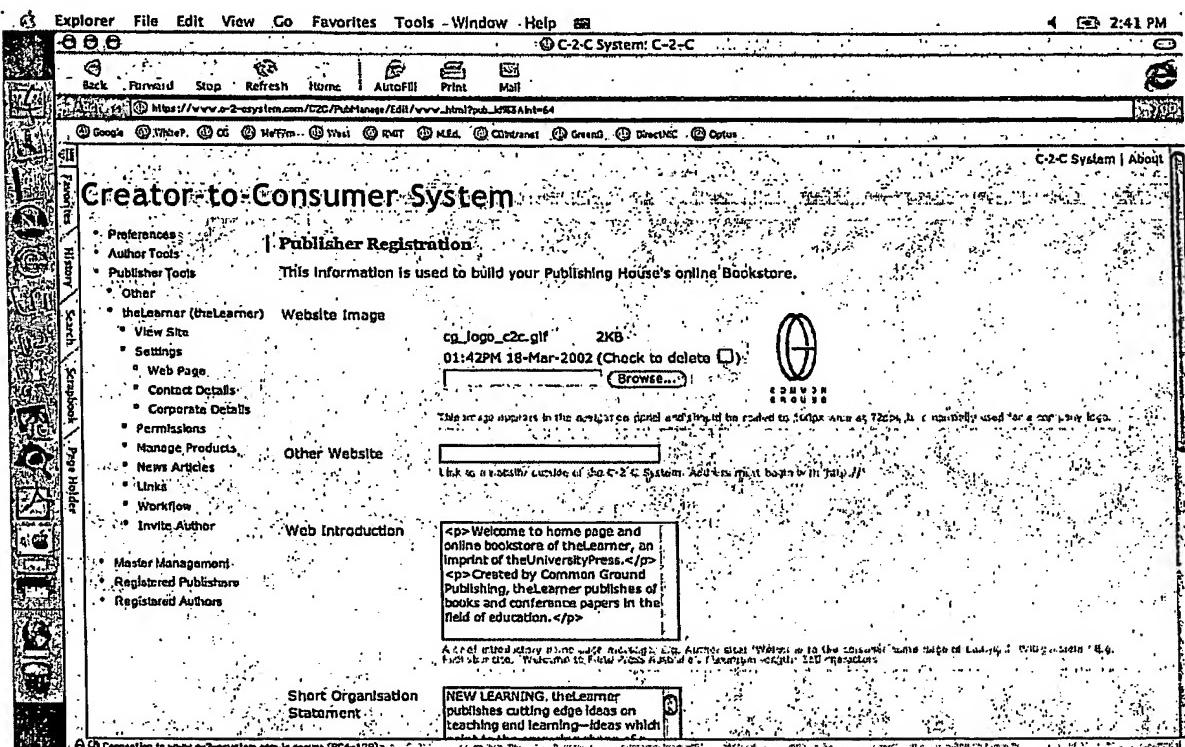
FIG. 5: Ontology-Building Apparatus—CGLexicographer.

|   |  | Properties | Field | View | Comments | Help | Undo | Save |
|---|--|------------|-------|------|----------|------|------|------|
| <b>Ontology Term at Zope → Intranet → CGOntology → CGCountryOfPublication</b> |  |            |       |      |          |      |      |      |
| Structure Properties  |  |            |       |      |          |      |      |      |
| Tag-Concept   | Country Of Publication   |            |       |      |          |      |      |      |
| Dictionary Definition   | The country in which a <ref id="CGPublisher"/> or an <ref id="CGImprint"/> officially publishes a particular <ref id="CGProduct"/>.  |            |       |      |          |      |      |      |
| Description   |  |            |       |      |          |      |      |      |
| Children  | <a href="#">CG35mmSlideProjector</a><br><a href="#">CGAGLS</a><br><a href="#">CGASPCContractsDelegation</a><br><a href="#">CGAbbreviatedTitle</a><br><a href="#">CGAbbreviation</a><br><a href="#">CGAbbreviationList</a><br><a href="#">CGAbridgedVersionOf</a> |            |       |      |          |      |      |      |
| Schema Synonyms   | ONIX<CountryOfPublication><br>MARC<008,044\$>  |            |       |      |          |      |      |      |
| Data Type   | <input type="text"/> <input type="button" value="▼"/><br><input checked="" type="checkbox"/><br><input type="button" value="Save Changes"/>  |            |       |      |          |      |      |      |
| Is a field?   |  |            |       |      |          |      |      |      |

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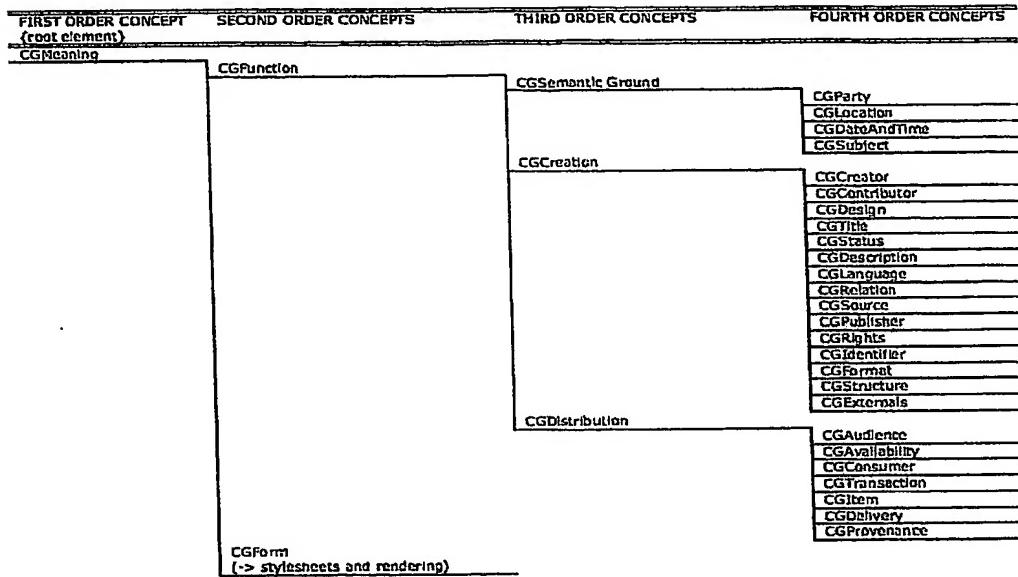
FIG. 6: Data entry area in CGPublisher (formerly named the Creator-to-Consumer (C-2-C) System. Using the invention, data can be exported into multiple ontologies.



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FIG. 7A: Example of Taxonomic Representation of Tags Relations in overlapping Ontologies, as Generated by the Invention with First to Fourth Order Concepts



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FIG. 7B: Example of Taxonomic Representation of Tags Relations in overlapping Ontologies, as Generated by the Invention with Fourth to Sixth Order Concepts

| FOURTH ORDER CONCEPTS   | FIFTH ORDER CONCEPTS  | SIXTH ORDER CONCEPTS   |
|---|---|--|
| <b>CGParty</b><br>XML<principal><br>IN <party><br>SCORM<centry> | <b>CGPerson</b><br>IMS<person><br>ONIX<Name><br>XML<commonName><br>IN <person><br>EAD <personalname><br>MARC<103/700 11 = 1; 12 = # ;<br>\$a,600 11 = 1; 12 = 4; \$d> | <b>CGNameFunction</b><br>CGNameAndPublication<br>CGLegalName<br>XML<givenName><br><b>CGHonorific</b><br>ONIX<TitlesBeforeNames><br>DB <honorifics><br>MARC<100/700 11 = 1; 12 = # ; \$0;<br>\$c,600 11 = 1; 12 = 4; \$c> |

|                       |   |  |
|-----------------------|---|--|
|                       | <b>CGGivenNames</b><br>ONIX<NamesBeforeKey><br>DB <firstName>,DB <othername><br>MARC<100/700 11 = 1; 12 = # ;<br>\$a,600 11 = 1; 12 = 4; \$a><br>EML<initials-prefix> | <b>CGSurnamePrefix</b><br>ONIX <PrefixToKey>             |
|                       | <b>CGSurname</b><br>ONIX<KeyNames><br>DB <surname><br>EAD <familyname><br>MARC<100/700 11 = 1; 12 = # ; \$0;<br>\$b,600 11 = 1; 12 = 4; \$b>                          | <b>CGNameSuffix</b><br>ONIX<SuffixToKey><br>DB <lineage> |
| V {to CGOrganisation} |   |  |

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FIGURE 8 shows a fragment of the Dublin Core to CGML Thesaurus.

| CGML Tag/Concept | DC Tag-concept | DC Values, Qualifiers   |
|------------------|----------------|---|
| CGTitle          | DC<Title>      | <p><b>Definition:</b> A name given to the resource.</p> <p><b>Comments:</b> Typically, Title will be a name by which the resource is formally known.</p> <p><b>Exemplary Qualifiers:</b></p> <ul style="list-style-type: none"> <li>-Label Alternative</li> </ul> <p><b>Definitions:</b> Any form of the title used as a substitute or alternative to the formal title of the resource.</p> <p><b>Comments:</b> This qualifier can include titles, abbreviations as well as translations.</p> <p><a href="http://www.w3.org/2000/01/rdf-schema#label">http://www.w3.org/2000/01/rdf-schema#label</a></p>  |
| CGCreator        | DC<Creator>    | <p><b>Definition:</b> An entity primarily responsible for making the content of the source.</p> <p><b>Comments:</b> Examples of a Creator include a person, an organization, or a service. Typically, the name of a Creator should be used to indicate the entity.</p> <p><a href="http://www.w3.org/2000/01/rdf-schema#label">http://www.w3.org/2000/01/rdf-schema#label</a></p>   |
| CGSubject        | DC<Subject>    | <p><b>Definition:</b> The topic of the content of the resource.</p> <p><b>Comment:</b> Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification schema.</p> <p><b>Exemplary Qualifiers:</b></p> <ul style="list-style-type: none"> <li>-Label CSN</li> <li>-Label LCSH</li> <li>-Definition Library of Congress Subject Headings MARC&lt;651, 610, 611, 674, 650&gt;</li> <li>-Label MeSH</li> <li>-Definition Medical Subject Headings See also <a href="http://www.nlm.nih.gov/mesh/meshhome.html">http://www.nlm.nih.gov/mesh/meshhome.html</a> MARC&lt;600, 610, 611, 630, 650&gt;</li> <li>-Label DDC</li> <li>-Definition Dewey Decimal Classification See also <a href="http://www.oclc.org/dewey/index.htm">http://www.oclc.org/dewey/index.htm</a> MARC &lt;037&gt;</li> <li>-Label LCC</li> <li>-Definition Library of Congress Classification See also <a href="http://loc.nat.us/ardiv/lcc/lcc.html">http://loc.nat.us/ardiv/lcc/lcc.html</a> MARC&lt;650&gt;</li> <li>-Label UDC</li> <li>-Definition Universal Decimal Classification See also <a href="http://www.uicc.org/MARC-UDC">http://www.uicc.org/MARC-UDC</a> MARC&lt;600, 610, 611, 630, 650, 657&gt;</li> </ul> |

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FIGURE 9 shows a fragment of the CGML Dictionary of Authorship and Publishing specifying the concepts of <Creation> and <Creator>.

| NOTATION<br>Tag-Concept. | DEFINITION<br>Dictionary definition based on parent concepts.  | ANNOTATION<br>Examples, related child concepts, data entry advice.  |
|--------------------------|--|---|
| CGCreation               | The process of realising Meanings which serve particular communicative or representational Functions.  | Involves Creators and Contributors, developing a Design, which is expressed as a Work and is manifest in the form of a Product, Event or Service. A Design has a Title and may vary in Status (as it evolves, for instance, from Proposal, to Draft, to Edition). It may have a Description which summarises or overviews its content. In the case of text, it will be expressed in a particular language. It may sit in defined Relation to other Designs, Works or Products, and this may be specified as a Source. Distribution may be the responsibility of a Publisher, on the basis of an assignment or licensing of Rights. It may have an Identifier in the form of a unique string of numbers and/or letters such as an ISBN or a URL. It will have a Format and an Inherent and characteristic Structure, and also possibly Externals which exists specifically in order to relate to the Work, for example by way of Review or Promotional Matter. |
| CGCreator                | A Person who, or an Organisation which, plays a primary role in the conceptualisation of a creative Design and the execution of a Work. An essential Party to the process of Creation. | Includes the roles of Author, Editor, Scriptwriter, Lyricist, Composer, Visual Artist, Photographer and Conference Presenter.   |